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Conference Abstract

Classifying Colonial Objects in Museum Collections with Machine Learning and Historical Knowledge

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Abstract

Many natural history collections and museums in Europe were established in the late 18th and early 19th century. Their development is inseparably linked to colonial expansion and significant parts of their collections are of colonial origin. The Museum für Naturkunde Berlin (MfN) preserves a large natural history collection comprising zoological, paleontological, mineralogical, geological, and botanical objects as well as an institutional archive and a library. Especially in the period from 1884 to 1919, when the German Reich had colonies in Africa, the Pacific and China, the Zoological Museum of today's MfN played a prominent role in imperial politics. By a decision of the Federal Council in 1889 (*Bundesratsbeschluss*) and an addendum to this resolution in 1891, the museum received all zoological objects from expeditions financed by the state as well as the materials collected by colonial officials (Anonymous 1890,Kaiser 2023).

The disclosure and digital transformation of museum collections worldwide will significantly improve digital access for all stakeholders. Opening up the (digital) collections is also considered crucial for the role of museums in mobilising participation and societal change. However, the mere size of the MfN collection, estimated to comprise approximately 30 million objects, poses additional challenges. How can we identify the objects from colonial contexts among these millions and how do we tag them? A recent project, "Colonial Provences of Nature",*[1] led by historians at MfN, designed a decision tree to identify collection objects from the colonial past in which relevant categories of information and

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critical metadata were determined to confirm a colonial acquisition context (Kaiser et al. 2023).

In this talk we will present our approach and preliminary results towards automatisation of the decision-making process in the mammals collection at MfN. This subcollection offers a suitable case study for testing how machine learning algorithms and historical knowledge can be used to classify colonial items based on their geographical provenance and acquisition time. Several specimens were indeed acquired during German colonial rule in Africa, Asia and Oceania between the 1880s and the end of World War I. The metadata associated with these objects are available in the institutional collection management system and they can be extracted and cleaned to generate a dataset for training and testing decision trees (Alpaydin 2020). The research of suitable classifying algorithms has a dual scope. The first is to compare the algorithmic decision boundaries with the rule-based decision tree drawn by the MfN historians interested in identifying and tagging collection objects from colonial contexts. The second aim is to develop automated procedures for labelling objects in the museum collections as colonial/non-colonial and add this information to the standard taxonomic metadata raising awareness on the complex political history of the specimens available at MfN.

Keywords

imperial history, decision trees, natural history museums, provenance research

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Conflicts of interest

The authors have declared that no competing interests exist.

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Endnotes

*1 www.museumfuernaturkunde.berlin/en/science/colonial-provenances-nature